CLAIMS

1. An *in vitro* method which comprises labelling a biological molecule with hyperpolarised ^{129}Xe, and observing a magnetic resonance (NMR) spectrum and/or NMR image of the hyperpolarised ^{129}Xe in the environment of the biological molecule.

2. The method of claim 1 wherein the biological molecule is an assay reagent taking part in an assay method.

3. The method of claim 2 wherein the assay is a competition assay or an immunoassay.

4. The method of claim 2 wherein the assay is a hybridisation assay or a binding assay.

5. The method of any of claims 1 to 4 wherein the biological molecule is a peptide or a protein.

6. The method of any of claims 1 to 5 wherein the hyperpolarised ^{129}Xe is enriched at a level of 40 % or more.

7. The method of any of claims 1 to 6 wherein the degree of hyperpolarisation is 8 % or more.

8. The method of any of claims 1 to 7 which is performed in a solution wherein the solvent has a viscosity in the range of 700 to 1500 mPs.

9. The method of any of claims 1 to 8 wherein the pressure of the xenon gas is at least 5 bar.